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A TASMANIAN HETEROPOD, PTEROTRACHEA (PTEROTRACHEA) KINGICOLA SP. NOV.

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PLATES XI-XII

ABSTRACT

The first Heteropod recorded for Tasmania, *Pterotrachea (Pterotrachea) kingicola sp. nov.*, is here described and figured. Published accounts of the Heteropod fauna of Australia are few, and the occurrence of a species in Tasmanian waters is of considerable interest. The specimen, a male, comes from King Island, where it was caught in a crayfish pot at 28 fathoms by the donor, Mr A. J. Burgess.

Family PTEROTRACHEIDAE

Genus **Pterotrachea** Cuvier, 1817

Subgenus **Pterotrachea**

Pterotrachea (Pterotrachea) kingicola *sp. nov.*

(PLATES XI-XII)

Diagnosis. Closest to *Pterotrachea (P.) challengeri* Tesch, 1906. Chief differences: *(a)* greater number of branchiae (16); *(b)* central tooth of radula narrower at base; *(c)* greater number of denticulations on central plate of radula (usually 8-10); *(d)* greater length of tail (1·6 in trunk); *(e)* absence of spines on medial dorsal ridge.

Description. *(a) Proboscis.* The round muscular proboscis is of the usual type, tapering distally, and its length, from 'chin', omitting bulb, is contained 2·2 in the trunk (body, without tail). Its greatest depth occurs in front of the supraorbital ridge, this measurement being contained 3·6 in the length: its smallest depth occurs about two-elevenths from the distal end, and is contained 8·2 times in the length. About one-fifth of the length terminates distally in a muscular bulb, whose width is a little more than three-quarters of its length. This muscular bulb contains the oral cavity. Arising on the dorsal surface, about one-fifth of proboscis length in advance of the supraorbital crest, is a low transparent membranous ridge, highest anteriorly. This ridge terminates abruptly at origin of muscular bulb. On the ventral surface is a whitish muscular apparatus, beginning just in front of the eye, and extending the whole length of the proboscis. Its outline can be clearly traced until, at the distal end, it reaches the muscular bulb, with which it becomes confluent. The width of the apparatus varies somewhat, reaching at a swelling, at about the distal two-thirds of its length, a maximum of a little more than half greatest depth of proboscis. At its proximal end there is a group of small opaque spots: similar spots also occur sparsely along most of its extent.

(b) Trunk. The compressed trunk, whose width is 1·6 in its depth, and a little less than twice in the nucleus, is like that of *P. (P.) challengeri.* When straightened, its length, from origin of tail to chin, is 2·2 times the length of the proboscis: its greatest width, which occurs approximately the length of the tail from the proboscis, is equal to half the depth of the fin. Opaque spots on the skin are numerous, being concentrated chiefly round the base of the fin, the largest spot measuring 1 mm. in diameter. Practically the whole of the trunk is enclosed in a transparent membranous bag, projecting sometimes as a ridge. From just underneath the chin to the origin of the fin, the membrane is in the form of a bag open below, its greatest depth being about three times horizontal eye-diameter. An extension of this bag continues narrowly along the trunk to the tail.

(c) Tail. The much-compressed tail is relatively longer than that of *P. (P.) challengeri,* being contained 1·6 times in the trunk; its greatest depth, 1·8 in length of proboscis, occurs about three-fifths of the length from the tip. The hinder portion of the intestine extends backwards in the form of a loop, about half as long as the nucleus, to lie in a hollow in the tail. This hollow is quite open externally, and access to it can be gained by slipping a seeker into the slit in the fin. The flap of the tail forming the right wall of this pouch hangs down below that forming the left wall to the extent of about twice the horizontal diameter of eye. The narrow distal portion of the intestine terminates near the apex of the nucleus. Running lengthways along each side of the tail are four ribbon-like bands. They all join distally, terminating in a U-shaped band in the horizontal end-fin. Running along each band is a series of spines, about 8 to the centimetre. The terminal horizontal end-fin, which is one and one-third times as long as wide, is divided in the last one-third of its length into two free overlapping flaps. The margin of the fin is scalloped, particularly on the dorsal surface near the trunk. From the U-shaped ribbon band numerous fine nerve fibres, just distinguishable to the naked eye, branch off.

(d) Fin. The origin of the base of the fin lies about twice as far from the anterior end of the trunk as its termination is from the posterior end of the trunk; the base of the fin is contained 2·0, the length 1·6, and the depth 1·2 in the length of the proboscis. For most of its area it is opaque, but three-fifths of the free outer margin is transparent, the greatest depth of the transparent area being about one-quarter depth of fin. The outer margin of the opaque area is denticulate, the projections being recurved. The radiating system of nerves becomes very conspicuous in the transparent outer portion. Concentrated white spots occur at base of fin.

(e) Supraorbital Crest. The supraorbital spines are approximately 19 in number, situated on a membranous ridge on the forehead, the ridge originating 3·5 times horizontal eye-diameter in front of eye. They are arranged in a crest that takes the form of two spined ridges, between and behind which are irregularly arranged spines. On the left ridge the first two spines are joined at their base, and there is a single third one behind, then a larger fourth spine a little to the left of the third. On the right ridge the largest spines are the first and third, the second one being a little smaller than the others. The length of the ridge on which the crest rests is about equal to interorbital width.

(f) Eye. The eye is sessile, stud-shaped. The base internally consists of a disc from which arises a cylinder (the column), ending externally in a sphere. The complete organ measures 2 mm. horizontally, and 1 mm. vertically. Interorbital width is 3·0 horizontal diameter of eye. Distance of eye from distal end of proboscis equals 1·4 times proboscis. Between the eyes can be seen the white, opaque brain.

(g) Median Dorsal Ridge. The medial dorsal line of the trunk rises in front of the nucleus to a ridge, whose length, which is twice interorbital distance, is one-fourth of its height: unlike that of *P. (P.) challengeri* it carries no spines.

(h) Genitalia. The specimen is a male. The genitalia consist of a tubular penis, situated on the right side of the specimen, about one-third of the length of the nucleus in front of the nucleus, and an internal projecting nodule 1 mm. in length, placed just in front of the base of the penis. The penis, whose length is four times in the nucleus, tapers distally, and ends in a small swelling. Basally it is approximately 0·5 mm. in diameter.

(i) Nucleus. Standing clear of, and well out from, the distal end of the trunk is the nucleus, whose length is 1·8 in the proboscis. It is spindle-shaped, its greatest width heing 3·3 in its own length. In formalin this organ is flesh colored. On the side of the nucleus nearer the trunk, there arise from it two approximately equal transparent pouches, placed end to end, their length, which is about twice horizontal eye-diameter, about twice their depth. Along the middle of the anterior and posterior faces of the nucleus runs a transparent flange, much higher on the anterior face, where its height is not quite equal to width of nucleus. On this flange, at a distance from base of nucleus nearly equal to greatest width of trunk, lies a small sucker-like hollow, whose length, which is three times its depth, is just less than half width of nucleus. Running obliquely across the left face of the nucleus is a toothed transparent ridge, bearing about 12 spines. The length of the spine-bearing area is rather less than half length of nucleus. On the left face of the nucleus, at a distance from apex equal to width of nucleus, and lying just on top of the spine-bearing ridge, is a small aperture, the anus.

(j) Branchiae. A row of ten, varying in length from about one thirty-sixth to about one-half length of nucleus, arises from the base of the oblique spine-bearing ridge on the nucleus. A cluster of six, quite small, branchiae occurs on the anterior part of the transparent flange. The branchiae are filiform, tapering distally, and are slightly plumose.

(k) Teeth. The recurved palatal teeth, directed towards the oesophagus, are arranged in a row on each side of the oral cavity, and number four on one side. Unfortunately, the other row of teeth was damaged during the removal of the radula, but the approximate number would be four. The radula is of the characteristic type, each row comprising one large, central tooth, denticulated on a broad base, and, on each side, a strong single lateral and two long falciform marginals. There are 21 complete transverse rows, but 22 central plates. Radula formula thus is $\frac{2\ 1\ 1\ 1\ 2}{21\text{-}22}$. The central tooth is triangular, without distinct basal cusps, and is narrower basally than in *P. (P.) challengeri;* the denticulations flanking it usually number 8-10, commonly being simple, but sometimes bicuspid. The laterals are bluntly lobate. The marginals, two on each side of each row, are long, falciform, and very distinctly recurved.

TABLE OF MEASUREMENTS

	Millimetres
Length of proboscis, measured from 'chin', omitting bulb	33
Greatest depth of proboscis	9·0
Length of muscular proboscis-bulb	7·0
Width of muscular proboscis-bulb	5·0
Greatest width of muscular apparatus of proboscis	4·0
Height of dorsal ridge on proboscis	0·5
Length of dorsal ridge on proboscis	21
Approximate total length	147
Length of trunk	71
Greatest depth of trunk	14
Greatest width of trunk	8·5
Length of tail	43
Greatest depth of tail	18
Length of horizontal end-fin	12
Width of horizontal end-fin	9
Length of free flap of horizontal end-fin	4·0
Depth of fin	28
Length of fin	20·5
Base of fin	16
Base of supraorbital crest	6·5
Distance from anterior margin of supraorbital crest to eye	7
Horizontal diameter of eye	2·0
Vertical diameter of eye	1·0
Interorbital width	6
Maximum height of median dorsal ridge	3·0
Length of median dorsal ridge	12·0
Length of penis	4·5
Basal diameter of penis	0·5
Length of nucleus	18·0
Greatest width of nucleus	5·5
Length of toothed ridge on nucleus	9
Length of small sucker-like hollow on nucleus	3
Depth of small sucker-like hollow on nucleus	1
Length of shortest branchia	0·5
Length of longest branchia	9·5

Type. Described from the unique holotype male, 147 mm. in total length, in the collection of the Queen Victoria Museum, Launceston (Q.V.M. Reg. No. 1941. 254).

Locality. King Island, caught in a crayfish pot at 28 fathoms.

Affinities. Species of the genus *Pterotrachea* Cuvier, 1817 are not easy to define. Dealing with the *Siboga* material, Tesch (1906) says, 'However easily any *Pterotrachea* may be assigned to one or another group, to distinguish the actual species is very difficult, even taking into consideration all the circumstances. Among the material of the *Siboga* Expedition I looked as far as possible for specific characteristics; but how far my researches were accurate can only be decided by comparisons with *Pterotrachea* from other seas'.

Among the *Siboga* material dealt with by Tesch are two species, *P. (P.) challengeri* Tesch and *P. (E.) mutabilis Tesch*, from north of Australia in the region of the Malay Archipelago.

Tesch has diagnosed two subgenera, namely, *Pterotrachea*, the typical subgenus, and *Euryops*. The subgenera are charactized by direction of eyes, size and shape of nucleus, length of muscular apparatus on proboscis. The present species, which is distinguishable at sight from *P. (Euryops) mutabilis* (by longer tail, larger fin, and longer proboscis), would appear to enter the subgenus *Pterotrachea*, and approaches *P. (P.) challengeri* closely. From *P. (P.) challengeri* it differs chiefly in: greater number of branchiae (16), ranging greatly in length; central tooth of radula narrower at base; greater number of denticulations on central plate of radula (usually 8-10); greater length of tail (1·6 in trunk); greater width of tail (nearly equals width of fin); absence of spines on medial dorsal ridge.

There have been few records of Heteropods for Australia, this being the first for Tasmania. Dakin and Colefax (1940, p. 205) mention three species for Australia, namely, *Atlanta peroni* Lesueur, *Firoloida kowalewskii* Vayssière, which they figure (Plate III, fig. 2), and *Pterotrachea (Euryops) mutabilis* Tesch. They add, 'All three species of Heteropods mentioned above were taken in the Barrier Reef plankton'. They say of *Atlanta peroni* Lesueur 'occurs in the catches through the year and is, indeed, not an uncommon constituent of the plankton'; of *Firoloida kowalewskii* Vayssière, 'This species was taken regularly in our catches over a number of years during the months of April and September'; while of the only species of *Pterotrachea* they observe, 'has only been taken on very rare occasions during the month of September'.

Suter (1913, p. 354) mentions one *Pterotrachea* from New Zealand, *P. coronata* Forskal, 1775, referring to a large specimen with a length of about 320 mm.

REFERENCES

TESCH, J. J., 1906.—*Siboga-Expeditie. Die Heteropoden der Siboga Expedition*, L. I. Leiden, 1906.

DAKIN, W. J., and COLEFAX, A. N., 1940.—The Plankton of the Australian Coastal Waters off New South Wales. *Univ. Sydney, Dept. Zool., Monograph 1*, 1940.

SUTER, H., 1913.—*Manual of the New Zealand Mollusca*. Wellington, 1913.

PLATE XI

A TASMANIAN HETEROPOD: PTEROTRACHEA (PTEROTRACHEA) KINGICOLA SP. NOV.

General view of holotype (Q.V.M. Reg. No. 1940. 254). King Island: caught in crayfish-pot at 28 fathoms. Approximately natural size.

(Photograph by J. Glennie)

PLATE XII

PTEROTRACHEA (PTEROTRACHEA) KINGICOLA SP. NOV.

Fig. 1.—General view of holotype male (Q.V.M. Reg. No. 1941, 254). King Island; caught in a crayfish pot at 28 fathoms. Approximately natural size.

Fig. 2.—Left side of nucleus, showing anus, spine-bearing ridge, sucker-like hollow, and branchiae arranged in a linear series and a small tuft. Approximately natural size.

Fig. 3.—Central plate of radula. Magnified.

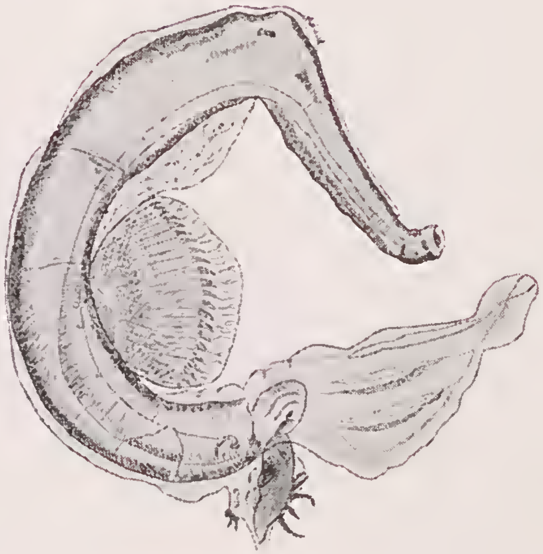

FIG. 1

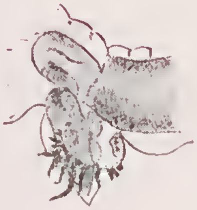

FIG. 2

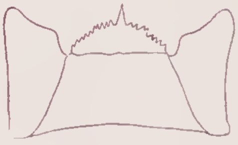

FIG. 3

LvG

H. H. Pimblett, Government Printer, Tasmania.